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EXAMINER	
BUTLER, PATRICK NEAL	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/039,064	GAIDJIERGIS ET AL.	
	Examiner	**Art Unit**	
	Patrick Butler	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _28 January 2008_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _18-22,24-39,41,43 and 45-55_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _18-22,24-39,41,43 and 45-55_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _04 January 2002_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Applicant's Interview Summary

Regarding the Interview 24 January 2008, Applicant's Interview Summary, submitted 28 January 2008, is contrary to the Interview Summary provided by the Examiner. Applicant's Specification's support for curing was discussed. However, agreement was not reached regarding the claimed order of curing before punching.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 18-22, 24-39, 41-43, and 45-55 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In Claim 19, line 3; Claim 25, line 3; Claim 31, line 3; Claim 38, line 3; Claim 42, line 2; and Claim 49, line 2 require that a "cured" fiber-cement panel be punched. Applicant's Specification discusses known methods of punching fiber-cement panels to include curing the panels (see Specification, Background section, [0002]) without providing support for curing of the panels manipulated by Applicant's invention. Thus, neither pre-punching nor post-punching curing is clarified with respect to Applicant's

invention. Claims 18, 20-22, 24, 26-30, 32-37, 39, 41, 43, 45-48, and 50-55 are rejected via their dependency.

With respect to Claims 31, in Claim 31, lines 4-6 claim a "first active drive member" and a "second drive member." Although the specification as originally filed provides for roller assemblies (see Specification, [0035]), it does not provide for drive members such as clamps which would meet the limitations of the claim. Claims 32-37 are rejected via their dependency.

Claim Rejections - 35 USC § 103

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent No. 4,580,374) and applicant's admitted prior art (see Specification, Background section, [0002 and [0006]).

With respect to Claims 18 and 19, Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a length, a width and a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches coupled to the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and

trimming (a support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes; driving the punches at least substantially simultaneously into and through at least a portion of the thickness of the fiber-cement panel to form a plurality of apertures in the fiber-cement panel by ejecting plugs from the fiber-cement panel through the holes in the support plate) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means 8 into fiber plate 3 at substantially the same time (driving the punches comprises penetrating the punches into the fiber-cement panel along the full length of the fiber-cement panel in one stroke of the punches).

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.

Neither Kober nor Quinnell specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.31625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant’s invention

to produce cement-fiber soffit boards having thicknesses of about ¼” to ½” (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

Kober and Quinnell do not appear to explicitly teach that the penetration depth is within the claimed range (e.g., 0.0625-0.1875 inches (without passing completely through)). However, in this regard, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

Kober in view of Quinnell lack or do not expressly disclose performing the punching on a cured fiber-cement panel.

Admission discloses that it is well known to cure a fiber-cement composition and then performing cutting, which would include punching (see Specification, Background section, [0002] and [0006]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Admission's method of punching after curing in Kober's process of punching fiber cement boards in order to overcome problems of drilling, to provide larger opening (see Specification, Background section, [0002] and [0006]), and because Kober is not limited to pre-cured or post-cured punching.

Claims 20-22, 38, 39, 41-43, and 45-55 are rejected under 35 U.S.C. 103(a) as being unpatentable Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent No. 4,580,374) and applicant's admitted prior art (see Specification, Background section, [0002 and [0006]) as applied to Claims 18 and 19 above, and further in view of Hugo (U.S. Patent No. 4,246,815).

With respect to Claims 20-22, Kober further teaches that each of the punch means 8 comprises a pin 10 (the plurality of punches) carried on a plate 9b removably secured to the upper portion 9a (a flat punch plate) of the upper platen 9 (the punch assembly) (the punch assembly includes a flat punch plate and the plurality of punches project from the punch plate, the punches being spaced apart from one another, and the punches having a first end attached to the punch plate, a second end opposite the first end with a contact face, and a first diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 (the support assembly) includes a plate (a flat support plate) having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11 (the plurality of holes), for receiving a punched plug, having an inner diameter

substantially equal to the outer diameter of the pins 10 (punches) (the support assembly includes a flat support plate and the plurality of holes extend through the support plate, each hole being aligned with a corresponding punch projecting from the punch plate, and the holes having a second diameter to provide a radial punch/hole clearance between the punches and the holes) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches toward the holes and into the fiber-cement panel until the punches eject the plugs from the panel).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes and the claimed spacing of the punches. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell as taught by Hugo to provide a punching apparatus with reduced punch wear and breakage as taught by Hugo. Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

With respect to Claims 38 and 42, Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches having a first cross-sectional dimension coupled to the punch plate) and a lower platen 5 for supporting the fiber plate 3 during

perforating and trimming (a support assembly so that a first side of the panel faces the punch assembly and a second side of the panel faces the support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes having a second cross-sectional dimension) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39).

With regard to the concept of driving the punches through only a portion of the fiber-cement panel without passing the punches completely through the panel, the examiner stipulates that Kober indirectly teaches this concept as further discussed hereafter. Kober further teaches that the upper platen 9 is provided with trimming blades 25 whose cutting edges are engageable against lead anvil strips 26 inset in the trays 7 to trim the edges all around the fiber plate 3 as the array of holes are punched through the fiber plate 3 (column 3, line 65 - column 4, line 2). As illustrated in the Figures, Kober further teaches that the punch means 8 are slightly shorter, but definitely no longer, in length than the trimming blades 25. If the travel of the trimming blades 25 and the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 as taught and the punch means 8 are slightly shorter in length than the trimming blades 25, the punch means 8 in the process of Kober would obviously only pass through a portion of the fiber plate 3 and would obviously be prevented from passing completely through the fiber plate 3 as claimed.

Moreover, with respect to teaching that the penetration does not pass completely through, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system. Neither Kober nor Quinnell specifically teaches that the perforations are tapered (i.e., have the first dimension of the punches at the first side of the panel and the second dimension of the holes at the second side of the panel) and that the second cross-sectional dimension of the holes is larger than the first cross-sectional dimension of the punches. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon

with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims). As illustrated in the marked-up version of Figure 3 below, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches through at least a portion of the thickness of the fiber-cement panel to form a plurality of tapered openings in the fiber-cement panel; driving the punches through at least a portion of the fiber-cement panel to form a plurality of openings in the fiber-cement panel that have the first dimension of the punches at the first side of the panel and the second dimension of the holes at the second side of the panel) and that the diameter of the die cavity 21 is larger than the diameter of the punch 15 (a plurality of holes having a second cross-sectional dimension larger than the first cross-sectional dimension of the punches). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punch / support arrangement taught by Hugo in the process of Kober in view of Quinnell to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to

use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

With respect to Claims 39 and 43, with regard to the concept of driving the punches through only a portion of the fiber-cement panel without passing the punches completely through the panel, the examiner stipulates that Kober indirectly teaches this concept as further discussed hereafter. Kober further teaches that the upper platen 9 is provided with trimming blades 25 whose cutting edges are engageable against lead anvil strips 26 inset in the trays 7 to trim the edges all around the fiber plate 3 as the array of holes are punched through the fiber plate 3 (column 3, line 65 - column 4, line 2). As illustrated in the Figures, Kober further teaches that the punch means 8 are slightly shorter, but definitely no longer, in length than the trimming blades 25. If the travel of the trimming blades 25 and the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 as taught and the punch means 8 are slightly shorter in length than the trimming blades 25, the punch means 8 in the process of Kober would obviously only pass through a portion of the fiber plate 3 and would obviously be prevented from passing completely through the fiber plate 3 as claimed.

Kober, Quinnell, and Hugo do not specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill

in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

With regard to the concept of driving the punches through only a portion of the fiber-cement panel without passing the punches completely through the panel, the examiner stipulates that Kober indirectly teaches this concept as further discussed hereafter. Kober further teaches that the upper platen 9 is provided with trimming blades 25 whose cutting edges are engageable against lead anvil strips 26 inset in the trays 7 to trim the edges all around the fiber plate 3 as the array of holes are punched through the fiber plate 3 (column 3, line 65 - column 4, line 2). As illustrated in the Figures, Kober further teaches that the punch means 8 are slightly shorter, but definitely no longer, in length than the trimming blades 25. If the travel of the trimming blades 25 and the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 as taught and the punch means 8 are slightly shorter in length than the trimming blades 25, the punch means 8 in the process of Kober would obviously only pass through a portion of the fiber plate 3 and would obviously be prevented from passing completely through the fiber plate 3 as claimed.

Moreover, with respect to teaching that the penetration does not pass completely through, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35).

As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

With respect to Claims 41 and 45-48, Kober further teaches that each of the punch means 8 comprises a pin 10 carried on a plate 9b removably secured to the upper portion 9a of the upper platen 9 (the punches are arranged in an array and have a diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 includes a plate having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11, for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (the holes are arranged in a corresponding array and have a diameter) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches along a punch stroke into the fiber-cement panel until the punches eject plugs from the panel in the direction of the punch stroke).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes. However, in this regard, Kober does teach that the perforation diameter may

be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell and Hugo, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches

having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell as taught by Hugo to provide a punching apparatus with reduced punch wear and breakage as taught by Hugo.

With respect to Claims 49 and 50, Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a length, a width and a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches having a first cross-sectional dimension coupled to the punch plate) and a lower platen 5 for

supporting the fiber plate 3 during perforating and trimming (a support assembly so that a first side of the panel faces the punch assembly and a second side of the panel faces the support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes having a second cross-sectional dimension; driving the punches through at least a portion of the fiber-cement panel to form a plurality of openings in the fiber-cement panel) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39).

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system. Neither Kober nor Quinnell specifically teaches that the second cross-sectional dimension of the holes is larger than the first cross-sectional dimension of the punches. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a

extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims). As illustrated in the marked-up version of Figure 3 below, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches through at least a portion of the thickness of the fiber-cement panel to form a plurality of openings in the fiber-cement panel) and that the diameter of the die cavity 21 is larger than the diameter of the punch 15 (a plurality of holes having a second cross-sectional dimension larger than the first cross-sectional dimension of the punches). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punch / support arrangement taught by Hugo in the process of Kober in view of Quinnell to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Neither Kober nor Quinnell specifically teaches pressing a compressible biasing element against the first side of the fiber-cement panel as the punches move along the

punch stroke. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 wherein the punch 15 is surrounded by an elastomerically deformable, annular insert 50 having a striking surface 54 for engaging the upper surface of the workpiece W during punching (pressing a compressible biasing element against the first side of the fiber-cement panel as the punches move along the punch stroke) (column 1, lines 5-9; column 2, lines 38-52; column 3, lines 33-54; claims). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to surround the pins with annular inserts in the process of Kober in view of Quinnell as taught by Hugo to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo).

Kober, Quinnell, and Hugo do not specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed

range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

Kober in view of Quinnell and Hugo lack or do not expressly disclose performing the punching on a cured fiber-cement panel.

Admission discloses that it is well known to cure a fiber-cement composition and then performing cutting, which would include punching (see Specification, Background section, [0002] and [0006]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Admission's method of punching after curing in Kober's process of punching fiber cement boards in order to overcome problems of drilling, to provide larger opening (see Specification, Background section, [0002] and [0006]), and because Kober is not limited to pre-cured or post-cured punching.

With respect to Claim 51, the discussion of Kober, Quinnell, Hugo and the admitted prior art as applied to claim 49 above applies herein.

Neither Kober nor Quinnell specifically teaches driving the punches completely through the fiber-cement panel to eject the plugs from the fiber-cement panel. However, as illustrated in Figure 3, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches comprises passing the punches along a stroke path completely through the fiber-cement panel and ejecting the plugs from the panel in the direction of the punch stroke). It would have been prima facie obvious to one of ordinary skill in the art at the time the

invention was made and one of ordinary skill would have been motivated to drive the punches completely through the fiber plate in the process of Kober in view of Quinnell as taught by Hugo to assure that the plugs were completely ejected from the fiber plate.

With respect to Claims 52-55, Kober further teaches that each of the punch means 8 comprises a pin 10 carried on a plate 9b removably secured to the upper portion 9a of the upper platen 9 (the punches are arranged in an array and have a diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 includes a plate having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11, for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (the holes are arranged in a corresponding array and have a diameter) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches into the fiber-cement panel to form openings).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the

pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell and Hugo, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Note that, as discussed above with regard to claim 49, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches comprises moving the punches into the fiber-cement panel to form openings having a first dimension at the first side of the panel and a second dimension larger than the first dimension at the second side of the panel).

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately

4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent No. 4,580,374), Vinson et al. (U.S. Patent No. 4,985,119), and applicant's admitted prior art (see Specification, Background section, [0002 and [0006]).

With respect to Claims 24 and 25, Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches coupled to the punch plate) and a lower

platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes; driving the punches through at least a portion of the thickness of the fiber-cement panel to form a plurality of apertures in the fiber-cement panel by ejecting plugs from the fiber-cement panel through the holes in the support surface); and lifting the trays 7 off of the lower platen 5 to pull the board free at the region of the tray holes (withdrawing the punches from the fiber-cement panel without delaminating the fiber-cement panel at the apertures) (column 1, lines 13-17; column 2, lines 53-64; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means 8 into fiber plate 3 at substantially the same time (driving the punches comprises penetrating the punches into the fiber-cement panel along the full length of the fiber-cement panel in one stroke of the punches). Note that one of ordinary skill in the art would have recognized, when viewing the teachings of Kober as a whole, that the lifting off of the trays would have obviously been performed without any significant delaminating at the apertures.

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the

invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.

Neither Kober nor Quinnell specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

Neither Kober nor Quinnell specifically teaches that the fiber plate may comprise cellulosic material instead of asbestos. However, Vinson et al. teach a method for making fiber-reinforced structures and building materials from water-curable inorganic binders, such as cement and calcium silicate, and fibers wherein the traditional asbestos fibers are replaced with natural cellulosic fibers such as softwood fibers, hardwood fibers and a variety of vegetable fibers (the fiber-cement panel comprising cement, cellulosic material, and a binder) (column 1, lines 11-29). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use cellulosic fibers as a

replacement for the asbestos fibers in the process of Kober in view of Quinnell as taught by Vinson et al. to provide a fiber reinforcement with fewer safety and health concerns as set forth in Vinson et al.

Kober, Quinnell, and Vinson do not appear to explicitly teach that the penetration depth is within the claimed range (e.g., 0.0625-0.1875 inches (without passing completely through)). However, in this regard, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober, Quinnell, and Vinson through routine experimentation based upon driving out the plugs.

Kober in view of Quinnell and Vinson lack or do not expressly disclose performing the punching on a cured fiber-cement panel.

Admission discloses that it is well known to cure a fiber-cement composition and then performing cutting, which would include punching (see Specification, Background section, [0002] and [0006]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Admission's method of punching after curing in Kober's process of punching fiber cement boards in order to overcome problems of drilling, to provide larger opening (see Specification, Background section, [0002] and [0006]), and because Kober is not limited to pre-cured or post-cured punching.

Claims 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent No. 4,580,374), Vinson et al. (U.S. Patent No. 4,985,119), and applicant's admitted prior art (see Specification, Background section, [0002 and [0006]) as applied to Claims 25 and 24 above, and further in view of Hugo (U.S. Patent No. 4,246,815).

With respect to Claims 26-28, Kober further teaches that each of the punch means 8 comprises a pin 10 (the plurality of punches) carried on a plate 9b removably secured to the upper portion 9a (a flat punch plate) of the upper platen 9 (the punch assembly) (the punch assembly includes a flat punch plate and the plurality of punches project from the punch plate, the punches being spaced apart from one another, and the punches having a first end attached to the punch plate, a second end opposite the first end with a contact face, and a first diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 (the support assembly) includes a plate (a flat support plate) having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11 (the plurality of holes), for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (punches) (the support assembly includes a flat support plate and the plurality of holes extend through the support plate, each hole being aligned with a corresponding punch projecting from the punch plate, and the holes having a second diameter to provide a radial punch/hole clearance between the punches and the holes) (column 3, lines 28-59; Figures). As discussed

above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches toward the holes and into the fiber-cement panel until the punches eject the plugs from the panel).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes and the claimed spacing of the punches. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell and Vinson et al., one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober, Quinnell nor Vinson et al. specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick

workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell and Vinson et al. as taught by Hugo to provide a punching apparatus with reduced punch wear and breakage as taught by Hugo. Note that, although Hugo only teaches punching metal workpieces (see claims) and does not

specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

With respect to Claims 29 and 30, neither Kober, Quinnell, nor Vinson et al. specifically teaches providing a plurality of biasing elements coupled to the punch assembly wherein the biasing elements are compressible, resilient member projecting from the punch plate adjacent to the punches and withdrawing the punches from the fiber-cement panel comprises pressing resilient biasing members against the fiber-cement panel adjacent to at least a subset of the plurality of punches when the punches penetrate into the fiber-cement panel. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 wherein the punch 15 is surrounded by an elastomerically deformable, annular insert 50 having a striking surface 54 for engaging the upper surface of the workpiece W during punching (providing a plurality of biasing elements coupled to the punch assembly, the biasing elements being compressible, resilient members projecting from the punch plate adjacent to a punch; and withdrawing the punches from the fiber-cement panel by

pressing the biasing elements against the fiber-cement panel proximate to at least a subset of the punches as the punches penetrate the fiber-cement panel) (column 1, lines 5-9; column 2, lines 38-52; column 3, lines 33-54; claims). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to surround the pins with annular inserts in the process of Kober in view of Quinnell and Vinson et al. as taught by Hugo to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent No. 4,580,374), applicant's admitted prior art (see Specification, Background section, [0002 and [0006]), and Kober II (US Patent No. 3,914,079).

With respect to Claim 31, Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement;

depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (between a punch assembly; the punch assembly having a punch plate and a plurality of punches coupled to the punch plate and a plurality of punches projecting from the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means 8 into fiber plate 3 at substantially the same time (forming a plurality of apertures in the fiber-cement panel at least substantially simultaneously by driving the punches at least substantially simultaneously through the fiber-cement panel).

With regard to the concept of driving the punches through only a portion of the fiber-cement panel without passing the punches completely through the panel, the examiner stipulates that Kober indirectly teaches this concept as further discussed hereafter. Kober further teaches that the upper platen 9 is provided with trimming blades 25 whose cutting edges are engageable against lead anvil strips 26 inset in the trays 7 to trim the edges all around the fiber plate 3 as the array of holes are punched through the fiber plate 3 (column 3, line 65 - column 4, line 2). As illustrated in the

Figures, Kober further teaches that the punch means 8 are slightly shorter, but definitely no longer, in length than the trimming blades 25. If the travel of the trimming blades 25 and the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 as taught and the punch means 8 are slightly shorter in length than the trimming blades 25, the punch means 8 in the process of Kober would obviously only pass through a portion of the fiber plate 3 and would obviously be prevented from passing completely through the fiber plate 3 as claimed.

Moreover, with respect to teaching that the penetration does not pass completely through, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obvious recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the

punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.

Kober does not appear to expressly teach engaging an active drive assembly with the fiber-cement panel, wherein the active drive assembly has a first drive member, contacting one surface of the fiber- cement panel and a second drive member opposing the first drive member contacting an opposite surface of the fiber-cement panel; moving the first and second drive members such that the drive members feed the fiber-cement panel placing a fiber-cement panel between a punch assembly.

Kober II teaches utilizing a belt 8 and a band 9 to place a fiber mat into a press (engaging an active drive assembly with the fiber-cement panel, wherein the active drive assembly has a first drive member, contacting one surface of the fiber- cement panel and a second drive member opposing the first drive member contacting an opposite surface of the fiber-cement panel; moving the first and second drive members such that the drive members feed the fiber-cement panel placing a fiber-cement panel between a punch assembly) (see col. 2, line 51 through col. 3, line 30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Kober II's drive assemblies in the process of Kober in order to improve handling in a continuous operation (see col. 1, lines 37-42).

Kober in view of Quinnell lack or do not expressly disclose performing the punching on a cured fiber-cement panel.

Admission discloses that it is well known to cure a fiber-cement composition and then performing cutting, which would include punching (see Specification, Background section, [0002] and [0006]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Admission's method of punching after curing in Kober's process of punching fiber cement boards in order to overcome problems of drilling, to provide larger opening (see Specification, Background section, [0002] and [0006]), and because Kober is not limited to pre-cured or post-cured punching.

With respect to Claim 32, the discussion of Kober in view of Quinnell, applicant's admitted prior art, and Kober II as applied to claim 31 above applies herein.

Kober and Quinnell do not appear to explicitly teach that the penetration depth is within the claimed range (e.g., 0.0625-0.1875 inches (without passing completely through). However, in this regard, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

Claims 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent No. 4,580,374), applicant's

admitted prior art (see Specification, Background section, [0002 and [0006]), and Kober II (US Patent No. 3,914,079) as applied to Claims 31 and 32 above, and further in view of Hugo (U.S. Patent No. 4,246,815).

With respect to Claims 33-35, the discussion of Kober and Quinnell as applied to claim 31 above applies herein.

Kober further teaches that each of the punch means 8 comprises a pin 10 (the plurality of punches) carried on a plate 9b removably secured to the upper portion 9a (a flat punch plate) of the upper platen 9 (the punch assembly) (the punch assembly includes a flat punch plate and the plurality of punches project from the punch plate, the punches being spaced apart from one another, and the punches having a first end attached to the punch plate, a second end opposite the first end with a contact face, and a first diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 (the support assembly) includes a plate (a flat support plate) having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11 (the plurality of holes), for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (punches) (the support assembly includes a flat support plate and the plurality of holes extend through the support plate, each hole being aligned with a corresponding punch projecting from the punch plate, and the holes having a second diameter to provide a radial punch/hole clearance between the punches and the holes) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber

plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches toward the holes and into the fiber-cement panel until the punches eject the plugs from the panel).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes and the claimed spacing of the punches. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted

thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell as taught by Hugo to provide a punching apparatus with reduced punch wear and breakage as taught by Hugo. Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous

prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

With respect to Claims 36-37, the discussion of Kober and Quinnell as applied to claim 31 above applies herein.

Neither Kober nor Quinnell specifically teaches providing a plurality of biasing elements coupled to the punch assembly wherein the biasing elements are compressible, resilient member projecting from the punch plate adjacent to the punches and withdrawing the punches from the fiber-cement panel comprises pressing resilient biasing members against the fiber-cement panel adjacent to at least a subset of the plurality of punches when the punches penetrate into the fiber-cement panel. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 wherein the punch 15 is surrounded by an elastomerically deformable, annular insert 50 having a striking surface 54 for engaging the upper surface of the workpiece W during punching (providing a plurality of biasing elements coupled to the punch assembly, the biasing elements being compressible, resilient members projecting from the punch plate adjacent to a punch; and withdrawing

the punches from the fiber-cement panel by pressing the biasing elements against the fiber-cement panel proximate to at least a subset of the punches as the punches penetrate the fiber-cement panel) (column 1, lines 5-9; column 2, lines 38-52; column 3, lines 33-54; claims). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to surround the pins with annular inserts in the process of Kober in view of Quinnell as taught by Hugo to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Declaration

The declaration under 37 CFR 1.132 filed 28 January 2008 is insufficient to overcome the rejection of claims 18-22, 24-39, 41, 43 and 45-55 based upon the references applied under 35 U.S.C. 103 as set forth in the last Office Action.

The declaration under 37 CFR 1.132 filed 28 January 2008 refer(s) only to the system described in the above referenced application and not to the individual claims of

the application. Thus, there is no showing that the objective evidence of nonobviousness is commensurate in scope with the claims. See MPEP § 716.

Indications of the declaration under 37 CFR 1.132 filed 28 January 2008 appear to be on the grounds that:

1) The invention disclosed pertains to cured fiber-cement panels as opposed to uncured panels since applicant discloses cured fiber-cement panels (see Specification, [0004]).

2) The active drive mechanisms used to drive the cured fiber-cement panels of the claimed process are not for driving uncured filamentary mats, which would deform.

3) Applicant's invention does not require a separate tray to move the fiber-cement panels.

4) Kober is an uncured mat given that a vacuum pump 27 is present to remove the hydraulic binder and the support measures such as a tray are present. Kober would not provide ejection from partial punching because of the material compressing. Thus, Kober cannot be relied upon for teaching a cured panel with partial punch penetration.

5) The close tolerances of Kober's bores 11 with punches 10 would require additional force which would cause punch breakage and wear.

6) Since Quinnell provides slot production to be unsatisfactory, it would have been obvious to one of ordinary skill in the art at the time the invention was made to avoid punching boards to make soffits.

The indications of the declaration are addressed as follows:

1) Applicant's Specification discusses known methods of punching fiber-cement panels to include curing the panels (see Specification, Background section, [0002]) without providing support for curing of the panels manipulated by Applicant's invention. Thus, neither pre-punching nor post-punching curing is clarified with respect to Applicant's invention.

2) Appropriate weight is given to the opinion evidence. However, no factual evidence has been made of record showing that uncured panels would deform using applicant's roller assemblies (see Specification, [0035]).

3) Absent a claim element pertaining to not requiring a tray, there is no showing that the objective evidence of nonobviousness is commensurate in scope with the claims. See MPEP § 716.

4) Applicant's newly claimed limitation of punching a cured panel and Applicant's arguments with respect to Kober not clearly teaching punching a cured panel have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of applicant's admitted prior art (see Specification, Background section, [0002 and [0006]).

5) Appropriate weight is given to the opinion evidence. However, no factual evidence has been made of record showing suboptimal punch wear and breakage.

Moreover, it is not clear that some degree of punch wear and breakage does not occur with Applicant's process or that some degree of punch wear and breakage is intolerable in contrast to the benefits of producing the desired product.

Moreover, the benefits of creating the product would be at least as valuable as the chance of damaging the product as implied by Hugo's use of the inserts to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo).

6) As Quinnell is not modified to punch the fiber-cement panels, lack of motivation to do so is moot. Instead, Kober is modified to create the board used as a soffit in Quinnell.

In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

Response to Arguments

Applicant's arguments filed 28 January 2008 have been fully considered but they are not persuasive.

Applicant argues with respect to the 35 USC § 112 rejections. Applicant's arguments appear to be on the grounds that:

1) The amendments to Claims 75 and 79 obviate their rejections.

Applicant argues with respect to the 35 USC § 103 rejections. Applicant's arguments appear to be on the grounds that:

2) Kober fails to clearly disclose punching a cured panel and appears to disclose punching an uncured panel.

3) Quinnell teaches that it is unsatisfactory to form ventilation slots through cement-based soffit boards since separate, pre-formed plastic ventilator panels may be used.

4) Complete punch penetration is required to punch Kober's uncured panel since the material would compress and not eject.

5) It appears that the statement of optimizing penetration depth contains a grammatical error.

6) The citation of col. 4, lines 24-35 does not mention punch penetration depth. Kober cannot recognize penetration depth because the acted upon mat is not required to be cured.

7) Since Quinnell does not require ventilation of boards to be sufficient to use, Quinnell cannot be relied upon to use boards with ventilation.

8) Since Kober does not provide for an active drive assembly on opposing faces of the board, the claimed limitations are not met.

9) Support for the phrase "active drive assembly" is found in paragraphs [0035]-[0037] and Figure 5.

10) Driving the punches through only a portion of the panel is not supported by analysis of the figures since the line drawings are without any dimensions and the thickness of the lines follow Patent Office requirements regarding shading.

11) Kober's bores 11 in the tubes 18 would result in fiber pull of the uncured fiber-cement boards if sized according to the claimed sizes.

12) Incorporating Hugo's annular inserts would mar the surface of Kober's uncured mats.

13) Although it may be true that Hugo's punching arrangement would provide for a reduced breakage rate in punching metal, it does not follow that it would be true for

punching the material of Kober since the downward force to punch holes through uncured filamentary mats is far less than that for thick metal workpieces.

14) Applicant contests that the Examiner's findings of punch penetration depths and radial punch-hole clearance have been conceded.

The Applicant's arguments are addressed as follows:

1) In view of Applicant's amendment to cancel Claims 75 and 79, the Examiner withdraws the previously set forth 35 USC § 112 rejections of Claims 75 and 79 dated 26 July 2007.

2, 4, 6, 11, 12, and 13) Applicant's newly claimed limitation of punching a cured panel and Applicant's arguments with respect to Kober not clearly teaching punching a cured panel have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of applicant's admitted prior art (see Specification, Background section, [0002 and [0006]).

3) As Quinnell is not modified to punch the fiber-cement panels, lack of motivation to do so is moot. Instead, Kober is modified to create the board used as a soffit in Quinnell.

5) The statement of obviousness of optimizing penetration depth in Kober has been corrected to recite, "Kober obviously recognizes that penetration depth is a result-effective variable."

6) Kober teaches to optimize punch depth in col. 4, lines 24-35 by requiring paten 9 and punch 10 to descend until perforations are formed and plugs are driven out. Such

teaches do not require an arbitrary depth. Instead, the items descend sufficiently to cause the desired result of driving out the plugs of board material.

7) Since Kober's ventilated boards exceed the requirements of Quinnell, Kober's boards would necessarily be sufficient.

8) Applicant's newly claimed limitation of an active drive assembly on opposing faces of the board and Applicant's arguments with respect to Kober not clearly teaching an active drive assembly on opposing faces of the board have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kober II (US Patent No. 3,914,079).

9) Although the specification as originally filed provides for roller assemblies (see Specification, [0035]), it does not provide for drive members such as clamps which would meet the limitations of the claim.

10) Analysis of the figures is offered principally to show the figures may not be relied upon to show a requirement of complete penetration of the board by pins 10 per Applicant's arguments in page 23 of the 11 May 2007 response.

10) Moreover, Kober teaches optimization of penetration depth as recited above:

> Moreover, with respect to teaching that the penetration does not pass completely through, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective

variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

13) Although Applicant's discussion of comparing pin breakage has been considered, the arguments of counsel cannot take the place of evidence in the record.

14) As stated at various locations within the Office Action dated 27 February 2006, it is well known to optimize the board thickness (such as on Page 18, first paragraph); punch penetration depths (such as on Page 6, last line through Page 7, line 8); and absolute and relative clearance (such as on Page 12, second full paragraph bridging to following page). Since applicant has not contested this position in the subsequent response dated 29 August 2006, it is taken as concession. Therefore, the official notice is now considered admitted prior art.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is (571) 272-8517. The examiner can normally be reached on Mon.-Thu. 7:30 a.m.-5 p.m. and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. B./
Examiner, Art Unit 1791

/Monica A Huson/
Primary Examiner, Art Unit 1791